

progression observed and documented daily as a function of degree of colonization. Samples were collected for analytical testing at mix-up of the three mixes, when each mix of species, substrate, and sterilization treatment reached about 50% colonization, and again when each jar reached 100% colonization. Collected data was analyzed using analysis of variance (ANOVA) with repeated measured on the second factor. A Fisher's LSD analysis was performed for any significant effects. The statistical significance level was set at  $p < 0.05$ . Statistical analysis was performed using SPSS software and data was interpreted hierarchically.

[0064] *Pleurotus ostreatus* (Pearl Oyster) exhibited the greatest growth rates on Substrate 7 that had been pasteurized. Colonization of this combination reached 50% after 8 days; 100% colonization was achieved after 13 days.

We claim:

1-53. (canceled)

54. A method of bioremediating solid petrochemical-containing scrap material, the method comprising the steps of:

- a. breaking down the scrap material into discrete pieces;
- b. mixing the broken-down scrap pieces with a growth medium selected from the group consisting of sawdust, paper, hemp, straw, gypsum and cardboard to form a scrap-growth medium mixture;
- c. sterilizing the scrap-growth medium mixture;
- d. homogenizing the scrap-growth medium mixture;
- e. hydrating the scrap-growth medium mixture to a moisture content of 50-75%;
- f. inoculating the hydrated scrap-growth medium mixture with a saprotrophic fungus species selected from the group consisting of *Agrocybe* spp., *Amanita* spp., *Armillaria* spp., *Auricularia* spp., *Cerrena* spp., *Coprinus* spp., *Cyathus* spp., *Daedalea* spp., *Daedaleopsis* spp., *Daldinia* spp., *Echinodontium* spp., *Exidia* spp., *Fistulina* spp., *Flammulina* spp., *Fomes* spp., *Grifola* spp., *Hericium* spp., *Heterobasidion* spp., *Hypsizygus* spp., *Inonotus* spp., *Lenzites* spp., *Marasmius* spp., *Phanerochaete* spp., *Pisolithus* spp., *Sparassis* spp., *Strobilomyces* spp., *Xylaria* spp., *Pleurotus* spp., *Ganoderma* spp., *Trametes* spp., *Schizophyllum* spp., *Irpex* spp. and *Lentinula* spp.;
- g. exposing the hydrated scrap-growth medium-fungus mixture to air; and
- h. incubating the scrap-growth medium-water-fungus mixture.

55. The method of claim 54, wherein the petrochemical in the scrap comprises asphalt.

56. The method of claim 54, wherein the petrochemical in the scrap comprises a polycyclic aromatic hydrocarbon.

57. The method of claim 56, wherein the polycyclic aromatic hydrocarbon is selected from the group consisting of pyrene, naphthalene, and anthracene.

58. The method of claim 54, wherein the petrochemical in the scrap comprises a plastic.

59. The method of claim 58, wherein the plastic is selected from the group consisting of polyethylene, polypropylene, ethylene acrylate copolymer, ethyl-vinyl-acetate (EVA), polyvinyl chloride (PVC), ethylene propylene, ethylene propylene diene monomer rubber, and polyolefin.

60. The method of claim 54, wherein the sterilizing step is accomplished chemically.

61. The method of claim 60, wherein the chemical sterilizing step is accomplished with bleach or hydrogen peroxide.

62. The method of claim 54, wherein the sterilizing step is accomplished by heat.

63. The method of claim 54, wherein the sterilizing step is accomplished by autoclave.

64. A bioremediating composition, comprising:

- a. A plurality of discrete pieces of solid petrochemical-containing scrap material;
- b. growth medium selected from the group consisting of sawdust, paper, hemp, straw, gypsum and cardboard;
- c. air;
- d. water;
- e. a sterilizing agent; and
- f. a fungal culture selected from the group consisting of: *Agrocybe* spp., *Amanita* spp., *Armillaria* spp., *Auricularia* spp., *Cerrena* spp., *Coprinus* spp., *Cyathus* spp., *Daedalea* spp., *Daedaleopsis* spp., *Daldinia* spp., *Echinodontium* spp., *Exidia* spp., *Fistulina* spp., *Flammulina* spp., *Fomes* spp., *Grifola* spp., *Hericium* spp., *Heterobasidion* spp., *Hypsizygus* spp., *Inonotus* spp., *Lenzites* spp., *Marasmius* spp., *Phanerochaete* spp., *Pisolithus* spp., *Sparassis* spp., *Strobilomyces* spp., *Xylaria* spp., *Pleurotus* spp., *Ganoderma* spp., *Trametes* spp., *Schizophyllum* spp., *Irpex* spp. and *Lentinula* spp.

65. The composition of claim 64, wherein the petrochemical in the scrap comprises asphalt.

66. The composition of claim 64, wherein the petrochemical in the scrap comprises a polycyclic aromatic hydrocarbon.

67. The composition of claim 66, wherein the polycyclic aromatic hydrocarbon is selected from the group consisting of pyrene, naphthalene, and anthracene.

68. The composition of claim 64, wherein the petrochemical in the scrap comprises a plastic.

69. The composition of claim 67, wherein the plastic is selected from the group consisting of polyethylene, polypropylene, ethylene acrylate copolymer, ethyl-vinyl-acetate (EVA), polyvinyl chloride (PVC), ethylene propylene, ethylene propylene diene monomer rubber, and polyolefin.

70. The composition of claim 64, wherein the sterilizing agent comprises bleach or hydrogen peroxide.

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